1:Ingrams G-5 (1934-35)1936 MM2 Hadhramaut MM2
Historical South Arabia ML2

in the civilized world. The ancients could not do without it, for they required it in the performance of their religion, and when the Egyptians took to embalming their dead the demand increased. Pliny speaks with disapproval of the vast quantities used for secular purposes, and believed that the incense country of Arabia did not produce in a whole year so large a quantity of perfume as was burnt by Nero at the funeral of Poppaea.

We gather also from Pliny and other writers that the organization of the country in ancient times was much as it is to-day. When the trade of Europe and the East began to go by sea, the succession of old South Arabian kingdoms came to an end. Nature stepping in put an end to the incense trade by a process of desiccation, and nowadays incense-bearing trees are rare objects in the Hadhramaut proper.

Before I record the scant references to Hadhramaut history to be gleaned from the inscriptions, it will be well to bear in mind the names and approximate locations of the tribes of South Arabia. Eratosthenes says that proceeding in order down the Red Sea coast of Arabia were the Minaeans, Sabaeans, and Katabanaeans. To the east was Chatramotitae. Schoff gives the order on the South Arabian coast from west to east as Himyarites, Sabaeans, Qataban, Hadhramaut, and Habashat. Pliny remarks that the Minaeans were neighbours of Hadhramaut in the interior. Not later than the seventh century B.C. the state of Ausan was paramount in South Arabia. After Ausan fell, the principal power devolved on first Qataban, then Saba, and lastly Himyar.

In point of time the first reference to Hadhramaut is that which occurs in the tenth chapter of the Book of Genesis, but to pursue the passage beyond the mere name would soon involve us in legend. There were kings of Hadhramaut contemporary with those of Saba, and Saba may have risen to power about 800 B.C. There were fifteen rulers of Saba called *mukarib* (priest) who were followed by seventeen kings of Saba, and then by twenty-six kings of Saba and possessors of Reidan (Zafar near Yerim). Some of the later inscriptions are dated according to a Sabaean era which is presumed to have started about 115 or 114 B.C., from which time begin the kings of Saba and Reidan. How the change took place is not entirely clear, but an inscription which reads "Ilsharh Yahdib and his brother Ya'zil Bayyin the two kings of Saba and Reidan sons of Fara' king of Saba" suggests that the change of title was a peaceful affair perhaps due to the need of being by the sea.

There appear to have been close relations between Hadhramaut and the Minaeans, as a son of the Minaean king was king of Hadhramaut. There is an inscription in Ma'in recording the building of some towers dedicated to 'Athtar Dhu Qabd by the king of the Hadhramaut, in which he refers to the son of his brother, the king of Ma'in, which also indicates a close connection between the two people.

Rotation.—Heald states that mixed and overlapping rotations were found in Meifa and Asfal al 'Ain but, from careful enquiries, the following appeared to be the most popular:—Lucerne two years, followed by millet and the fourth year tobacco. If tobacco was not sown, the land was planted with another variety of millet. In some villages where lucerne was not grown, the rotation simply included tobacco and millet with sesame the third year.

In the Wadi Maseila the fields are constantly changed. One year a certain part of the wadi bed will be cultivated, stick huts and erections for drawing up the water built, and when the crop is harvested the Beduins move on elsewhere, returning again another season. Thus we frequently passed remains of cultivation, disused mud aqueducts and tumbled-down huts.

Diseases.—Heald states, "Excepting for the caterpillar attacking the young millet and tobacco, the crops were remarkably free from pests and disease; I carefully searched for stem borer in the millet but could find none, and also for the scale in the few citrus trees."

Trees and other vegetation of economic importance.

The *'elb* (*Sidr. Zizyphus Spina-Christi*, L.) has many uses. Apart from its blossoms, which are said to give the good taste to the Du'an honey, its fruit called *dōm* is eaten extensively by the Beduins when dates are lacking. The beams, pillars and doors of Hadhramaut houses are made from the timber, and the supply and carriage of the trunks give much employment to the Beduins. It also supplies good firewood. It is a fodder tree, and the leaves are also used as a substitute for soap.

Sār, a palm tree (*Hyphaene thebaica* (L.) Mart.), from which the Beduins gather the leaves called *sāf* for transport to the towns, where they are made into mats, baskets, country string, etc. A popular drink called *nebidh* is also procured from this tree.

The long-thorned *sumr* (*Acacia spirocarpa* Hochst.) is perhaps the commonest tree in the Hadhramaut. It is a popular fodder for camels and is likewise eaten by goats. It supplies good firewood and a substance taken from the roots called *futukh* is used by fishermen for greasing their lines in order to make them strong. Another thorny tree, the *geradh* (*Acacia senegal* Willd.), is also a common fodder. Its leaves are used for tanning skins and it is said that the Beduins make a drink from them which they liken to tea.

The *musht* tree (*Grewia erythraea* Schweinf.), is used extensively for firewood and camel fodder. The leaves of the *ariata* tree (*Conocarpus erectus* Jacq.), which grows in the Wadi Maseila where it sometimes reaches a height of 50 to 70 feet, are dried for fodder, and the timber probably has its economic uses. I was told in Tarim of a large tree growing in Wadi Maseila the strong wood of which is used by carpenters; this may have been the *ariata*.

137 314 246 *Rakh* (*Salvadora persica* L.) is a very popular fodder with camels and is found in abundance in the Wadi Maseila; it is also fairly common round Du'an but practically non-existent to the north of Shibam. Goats do not eat it. It also provides the Beduins with their favourite toothsticks.

Khuwcira, a small plant (*Cassia obovata* Coll.), is very popular with both camels and goats. There are of course many other plants on which they graze.

Manufacturing Industries.

496 262 249 Minor Industries include the extraction of simsim oil with camel mills. In Mukalla there is a large oil factory with 31 compartments in each of which a camel turns the usual primitive wooden machinery for expressing the oil from sesame seed. The oil extracted by this primitive process is much more popular for food that that extracted by modern machinery. It is considered much [231] sweeter. The residue forms a cake which is fed to camels.

339 438 353 There are kilns for lime-burning immediately to the east of Mukalla and in many other places. In particular most excellent lime is made in Seiyun and Tarim. This is applied as a plaster to the interiors of the houses and polished with smooth flints till it resembles marble.

28 Hides from the interior are tanned in Mukalla but none is exported. At Gheil ba Wazir I saw a leather-worker using Mukalla-tanned skins. Skins are also tanned in Shibam. The dyeing of cloth, weaving, and mat-making are other minor industries. Shihr in particular is well known for its beautiful 323 weaving. There are potteries in many places, and I saw the process 346 in Gheil ba Wazir. There are also good workers in silver at Gheil ba Wazir, Shihr and Mukalla.

Fisheries.

228 251 262 231 438 The manufacture of fish fodder and manure and the preparation of dried fish is a large industry of the coastal area. From an export point of view, fish products come third in importance. They are :—

Sifa (fish oil). Not much of this is made in either Mukalla or Shihr. The bulk is imported from the Mahri coast.

Wazif (dried *'aid* and other small fish). A great quantity of this is prepared in Mukalla and still more in Shihr. The sea is alive with these small fish, the catching and preparing of which gives work to many hundreds of fishermen. In both Mukalla and Shihr there are godowns for these fish which are stored before being taken to the interior for manure, camel fodder, or human consumption. The very small *'aid* fish are used for manure only, but the larger ones are eaten uncooked

8 Pike N-4 (no date) 1940 MM2 Hadhramaut MM2

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mineral content of the water seem to affect agriculture adversely. A striking example is seen about five miles north of Shihr where a series of springs depositing sulphur and gypsum have built an impressive mound, on which the village of Tabala stands. Their abundant and continued flow enables extensive irrigation by hand-dug canals and aqueducts and affords a means of livelihood for several hundred

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FIG. 19.—A caravan settling down for the night on the cold and stony Jol in the lengthening shadows of the setting sun. A caravan stops wherever night may overtake it and with little or no cover the Bedouins find a place to rest among the stones and shiver themselves to sleep. A coating of indigo stain with which the Bedouins not uncommonly paint themselves is said to be some defense against the night air.

people. The temperature of these springs on emergence is not far below boiling point, and they are reported to be the hottest on the coast.

At the small village of Harshiat, 3½ miles north of Mukalla, a few tepid sulphurous springs likewise are valuable for their yield. At the village of Gheil ba Wazir, on the inland road between Mukalla and Shihr, is an extensive gypsum flat and also a group of gypsum-depositing springs. Here a tobacco-raising community has sprung up. A part of the arable land is devoted to the growing of dates and millet and the remainder to tobacco, for which, owing to a quality unsurpassed in Southern Arabia, demand exceeds supply.

The small community of Husn Baquidran depends on a limited but constant supply of nongypsiferous sulphur water in the mountains of the Wadi Hajr, 30 miles from the coast. Irrigation is practiced on a small scale. The sites of Sidara and Mahamda, on the Wadi Hajr above Husn Baquidran, were determined by the presence of several groups of sulphur springs that are used for irrigation and consumption.

VEGETATION

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Today only the seaward fringe of the Dhufar Coast region, which during the pre-Islamic empires of the Minaeans, Sabaeans, and

Himyarites was an important export center for incense and myrrh, has enough rainfall to support a thin growth of vegetation, largely incense trees. From this area and the surrounding country, at one time more abundantly watered, the priceless gum was most extensively collected in the past. It is still gathered today in small amounts, according to demand. The gum, which adheres to the bark, is har-

FIG. 20 Caravan loading. The three men at the right are arguing about the disposition of loads.

vested from varieties of the Burseraceae family, *Boswellia Carterii* and *B. Bhua-Dajiana*, divided by the Arabs into four grades.[4] Its value, which ranges from £80 to £10 a ton, depends on such qualities as color (red, green, and brown), size of the gum particles, and degree of adulteration. Just as the rubber gatherers of the Amazon debased latex with pebbles and gravel, so did the Arabs in the heyday of the incense trade, and to some extent even now, admix varying amounts of fine sand with the gum to increase its weight. Between March and August the trees are tapped by knife incision and a milky juice is extracted, which dries in three to five days.

Besides incense trees, a thin and scattered growth of bunch grass, camel's-thorn, and a cedarlike evergreen abundant in some dry wadies is found in the Hadhramaut. Date-palm groves, which cover many square miles, are mainly dependent on irrigation.

Sources of Water Supply

In addition to artesian water and the water obtained from wells, other sources of supply are available. One of these is the *siquaya*, a small, rectangular, concrete tank with a capacity of 20 or 25 gallons erected along caravan routes near towns and maintained by them as a public service. Another is the well or cistern excavated at the base

[4] Freya Stark: The Southern Gates of Arabia. [New York]. 1936. pp. 10–11.

14: van der Meulen T-4 (1931) 1932 MM2 Hadhramaut MM2

taken place here, and there are still many slaves for agricultural work.

The old blind governor, Bā Surra, received us in his castle with oriental hospitality. The only thing we had to complain of in our lodgings was that there were too many interested in us! Our animals for mountain transport had to be exchanged here for others which were accustomed to traveling in the hot sand of the level *wādīs*.

On the 17th of May we resumed our journey, after having been entertained first in the summer residence of the vizier of Makalla, where his son acted as host. As the evening shadows fell we reached Sēf, a miserable and squalid village where nearly a century ago von Wrede was recognized as a Christian, and barely escaped a miserable death. We also had unpleasant experiences at Sēf. Long before Sēf the *wādī* had lost its splendid datepalm cultivation, and had become a broad valley of sand and stones, with here and there some lotus trees (*nibq*). After the excellent reception we had had at Dō'an, Sēf was a grievous disappointment. The governor was supposed to be away, but it appeared later that because of his embarrassment and poverty he had sought an excuse to be relieved of the duty of conferring hospitality upon us. In a very primitive manner we were installed upon the roof of a stable by the governor's soldiers, who took his place as our hosts. We were not left alone for a moment, for interested visitors were continually jostling one another on our roof. We had to secure fresh donkeys at Sēf, and the troublesome negotiations about this began that evening.

The next day the governor appeared, but he seemed to have absolutely no influence. We had to wait for hours before the necessary donkeys and camels were brought. A large escort of soldiers eager for *baksheesh* wished to accompany us, but I vigorously opposed this, and succeeded in reducing their number to two. Much too late, weary of all the negotiations and disgusted with the obvious opposition and antipathy of everybody here

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3. A typical town on unproductive land in the Wadi Du'an

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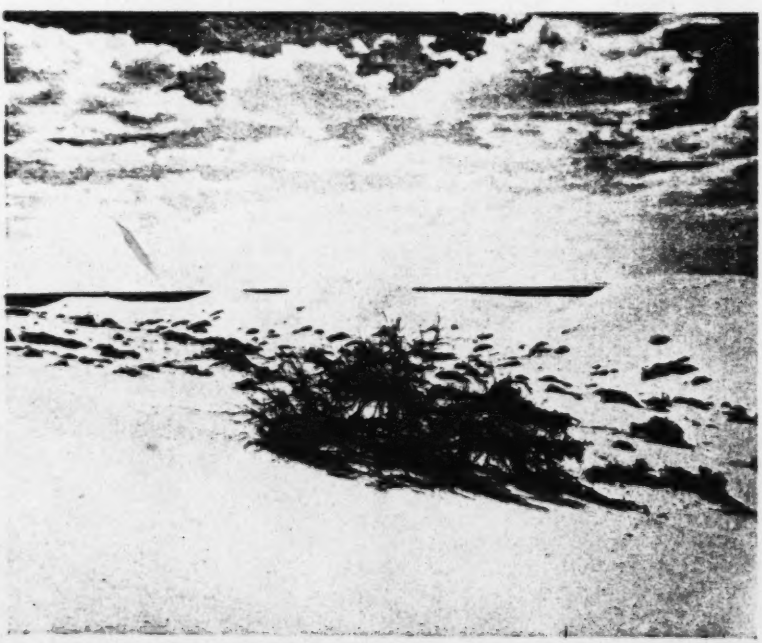

4. Part of the "Assoda" scarp seen from the Uruq az Zaza dunes. The scarp can be seen as a black line on horizon level. Vegetation is largely Calligonum comosum, Dipterygium glaucum and Cyperus sp.

FACING p. 423

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5. *Sandy shaqqa bearing Aristida plumosa and Calligonum comosum. These shiqaq extend for hundreds of miles between parallel dune chains, and vary between a half and two miles in width*

133

6. *Dune chains by the neolithic site in the Shaqqat al Khareitah. The dunes run to the south-west and the photograph was taken looking north*

FACING P. 426

½[The 'valleys' between parrallel dune chains -- Analyst]

15: Bunker N-4 (ca. 1950) 1953 MM2 Hadhramaut MM2

133 and besides the granite foothills to the south-west there is a line of hills formed by salt domes along the foot of the *jol* to the south-east. In this area too may be found lignite deposits and occasional volcanic craters.

The sands of the Ramlat Sabatain lie east–west south of the 16th parallel, and are completely separate from the sands of the Rub' al Khali. In the west, where they lie against the Yemen hills, they measure some 50 miles in width from north to south. To the east they taper to a width of about 10 miles where they enter the Wadi Hadhramaut, and then lie within the wadi as far east as Qa'udha with isolated sections even farther east by Shibam and Sai'un. Near Baihan and near Shabwa the orientation of the dunes is to 290°, with the slip face southwards. Near Shabwa this direction has been used to give an easy crossing from Nasar to Arain, and between the dunes may be found a well marked camel track which was possibly part of the old incense route. South of al 'Abr the dunes lie at 230° and from here curve in a large arc east and south-east until they run almost due south to near Bir 'Asakir. From the east–west section another group of dunes breaks off to run in a similar curve south into the mouth of Wadi Dhuhr. Farther east the alignment is east–west and south of Qarn Qaima there is a reticulated area of overlapping crescentic dunes about 8 feet high and with their slip faces west.

Many wadis from the Yemen hills run into the western section of the Ramlat Sabatain and are dissipated within the sands, but the Wadi Baihan [137] forces its way through the sands in a series of deep silty channels between the [104] dunes which are here fixed by bushes of *arta* (*Calligonum comosum*) and runs out on to the Jau Khudaif. By using this wadi, Baihan can be reached from the Wadi Hadhramaut and also from Aden by the new route from Mahfadh, which makes use of the Yashbum gorge and the line of discontinuity between the crystalline hills and the *jol*.

North of the Ramlat Sabatain, the Jau Mulais is limited to the east by the Sauda scarp. This scarp, which is of sandstones similar to those of the Karoo and possibly of Triassic origin, runs north from near Al 'Abr and includes the hills of Murassas, Maishatt, Wudiya'a, etc. It gets its name Sauda, literally "the black," from its covering of hardpan and pebbles heavily impregnated with ilmenite (Plate 4). Its position marks the westerly limit of limestones, both Jurassic and Eocene, remnants of each of which, much confused with bands of contemporary sandstones, have been found near Wudiya'a. The whole of the Sauda area is covered with a network of intersecting animal tracks converging on salt-licks, proof that the region was once much more prolific of wild life.

133 East of the Sauda lies the Jau Hudhi, an undulating sand plain whose low 137 hill features may easily be correlated with past drainage patterns. The larger of these hills sometimes bear fragmentary remains of limestone capping in the form of small boulders. From the air distinctive vegetation patterns have been seen near Zamakh. They consist of parallel lines some 30 yards apart running north-west to south-east. There is also one west-flowing tributary from this area to the abandoned watercourse at the foot of the Sauda scarp.

133 At the Khashm al Jebel, 17° 30′ N., 48° 17′ E., the Jau Hudhi ends in a sharp point at a height of a little over 2000 feet, being limited to the east by the cliff face of the *jol*, here about 120 feet high, and to the north by the first

16: Gardner A-4 (1937-38) 1939 MM2 Hadhramaut MM2

tufa surrounds, and almost blocks, the outlet, and forms a small fan below. In one case a narrow channel has been humanly cut in the deposit to lead the water into a cement tank from which periodically a few palms are watered. The surplus water overflows and is lost in the scree. Growing amongst the huge boulders are shrubs and trees, wild figs, *Ficus salicifolia*, and *F. sycamorus* being particularly common. Around the water itself maiden-hair fern and other small plants make a pleasant green garden in the rocky desolation.

At this level there is a limestone platform or shelf some 10–11 m. wide, and on the edge of this occur the outcrops of Pleistocene tufa. In the Wadi Luqrun it is a block 5 m. thick and 3–4 m. high, which is evidently but a remnant of a much more extensive deposit, for traces were detected on the walls of the great limestone overhang. Its present size and isolation are some measure of the time that has elapsed since its formation. A few badly preserved fossil leaves were found here, but also a considerable number of small cavities which, as in Kharga, are the moulds of fruits. Most of these show no structure and are therefore unidentifiable, but Mrs. E. R. Reid, who kindly examined them, found one that was certainly a fruit of a species of *Celtis*.

A climb of 50 m. or so up the scree slope to the top of the Cretaceous limestone leads over bare rock to the upper course of the wadi. In time of spate the waters must cascade in a fall over the lip. At Luqrun traces only of tufa occurred at this upper level, but in a valley east of Hureidha a much larger outcrop was found which yielded many leaves. Here, after half an hour's ride along the wadi floor, the track climbs gradually up the stony scree slope to the top of the Cretaceous limestone. A hundred metres or so from the edge a mass of tufa occurs as a terrace remnant 15–16 m. above the limestone floor. It is 4·6 m. high and rests on limestone breccia. This outcrop was particularly rich in leaves. The commonest types closely resemble figs, but without the fruits this identification cannot be assured. Some however seem identical with the *Ficus sycamorus* leaves found in the Kharga tufas,[1] and another resembles *F. salicifolia*; as both trees are still growing nearby they probably occur as fossils. Some kind of palm is certainly present and one or two other unidentified types. The shells are scarce and not well preserved. *Melania tuberculata*, *Zootecus insularis*, and a *Planorbis* were present. More abundant is the cast of a lava very similar in appearance to that found in Kharga and considered by Dr. Zeuner to be that of a dipterous insect.

The pool at the foot of the cliff was examined. It is called "El Bahr"—the sea[2]—and is a favourite bathing-place, the Badawin climbing the cliff and diving in from a considerable height. Local tradition calls it bottomless, and a weighted tape failed to touch bottom at 19 m. It would seem to be a super pot-hole, ground out through the ages by the swirling stones and water of the seasonal cascade from higher levels. It is in the shade for most of the day, and water remains all the year. The shallows around are covered with soft

[1] Gardner, "The Pleistocene fauna and flora of Kharga Oasis" (*Quart. J. geol. Soc.*, vol. xci, December 1935.)

[2] Van der Meulen and von Wissmann in 'Hadramaut: some of its mysteries unveiled' describe this place. "After energetic scrambling over fields of stone and up slopes of rock we actually arrive at El Bahr, a deep, rocky basin, full of water, with high cavernous walls, from which, after rain, the water must fall in spray into the basin."

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

A little way beyond the boundary-marks, about 20 Bedouins have made a bivouac under an overhanging wall of rock. On the top of the rock on the other side of the road are their outposts, who keep a sharp look-out for caravans passing along the high road. One caravan that had carried out a vendetta is now in safety in Makalla, a willing prisoner. We only realized later that we should be the ones to free it from that imprisonment.

The road winds through steep rocks and at last zigzags up to a plateau which seems to be of coral limestone formation. The hamlet of Maʿōṣ lies in a rocky valley a little in front of the plateau; further up, in a longer valley, there is a larger village called el-Ḥarshīyāt. From the plateau one can see, far away to the left, the village of el-Ḥawwāʾ. We are soon past the rock massif of Makalla, and the road descends to an inlet of the sea which has run far inland, whereon lies the village of Buwēsh. Papaya, bēdān and bananas are planted here along the edge of fields of lucerne. In the wādī that runs into the sea near Buwēsh there are, higher up, more date-palms and other fruit-trees, plantations which are the property of the Vizier and of other rich men of Makalla. The wells from which the fields are irrigated are not deep here, only 20 feet. On the coast between Buwēsh and Makalla lies Rūkeb. The road mounts again, runs for some time over coral formations, and then again drops to the Wādī Feleq, into which, far inland, the sea-water runs and which, consequently, is more like a small river. Baṣra lies a little higher up this wādī. At the edge of the stream we find much *asal*[1] growing. The coral limestone terraces on both sides are fairly high. The road runs farther over level land where jathropha shrubs grow; whole patches, also, are covered with incense bushes, which are recognizable by their scent and have either no leaves or very small ones. Some tall acacia bushes with elongated blossoms stand out here and there amidst the brownish shrubs which grow upon the bare rocky ground, strewn with pieces of coral.

[1] A kind of big reed.

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

137 In little valleys, green, juicy euphorbias grow to a height of six feet. Their fresh green colour and red tuberiferous flowers at the ends of their branches give them, in these colourless surroundings, the air of bouquets.

4. FIRST CONTACT WITH A HAḌRAMĪ NOMAD TRIBE.

233 361 342 A broad plain lower down has a clay soil where grass grows fairly well. Goats, sheep, donkeys and camels graze here, at distances widely apart from each other. Bedouin girls watch over them from a hill-top. This is the *Rēda*[1] of Sheḥĕr where are the pastures and headquarters of the wandering Bedouins of these parts. Their temporary camp is on a rocky plateau to the right above the road. We walk with our cameras in their direction, without much hope of success. They do not see us, and the malicious watch-dogs, which elsewhere in Arabia make it impossible to slip past the Bedouin camps, are conspicuous by their absence. The Bedouins of Ḥaḍramaut appear to have no tents; they live in caves, or houses, or huts, or, as in this case, almost without shelter. A space of about five feet square is made by four sticks of about three feet high with other sticks connecting them and over which are spread bunches of long, hard grass, which do not really, however, keep out much sun. There are about ten of these "dwellings" scattered around. Some are even more primitive and consist of bushes cut down, with a few rags stretched over them, thus making a little shade. There is an acacia tree in the camp; its top is made shadier by extra bits of scrub hung between its own thorny branches. A camel with a horribly swollen, inflamed leg lies there; a few men, women and children are sitting around, watching the poor beast's agony.

609 Our arrival arouses some commotion, but they seem tolerant of us and answer our questions with an air of curiosity.

104 [1] A *rēda* (ريدة) is the centre of the territory of a Bedouin tribe, where many of them dwell together. Generally it is a depression in the rocky plateau with some vegetation and agriculture.

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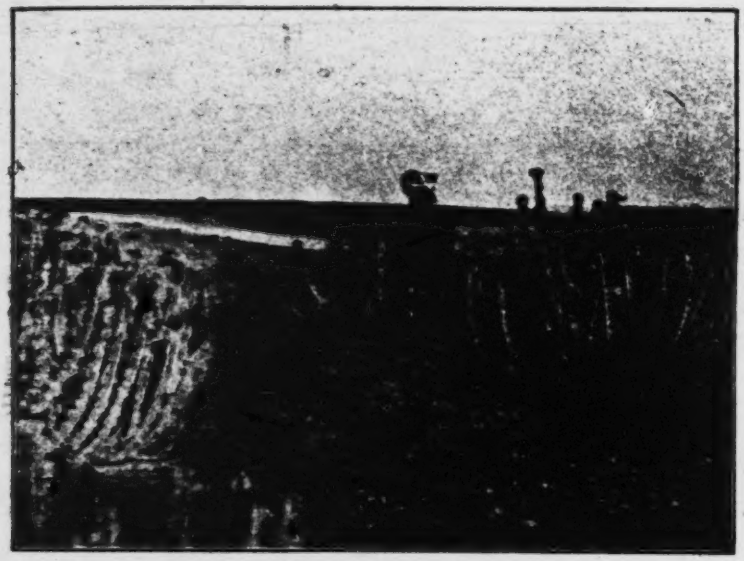

Euphorbia candelabra, on the coastal terrace between Makalla and esh-Shiḥr.

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8.54

Dwelling of Ḥaiqī Bedouins at Rēdet Sheḥēr. In the foreground a Bedouin cradle.

[facing p. 24]

609 "No, we eat the same things that you do."

"Stay with us and we will dance for you to-night with clapping of hands" — and our merry questioner danced and clapped her hands to the great diversion of the other women.

"We would gladly stay, but we have no time; we must go further."

837 "No, stay here! We will give you a wife."

Here I could not help glancing critically round the circle of my anything but beautiful questioners. They read my thoughts.

"No, the young girls are with the flocks, but they come home towards nightfall."

301 However poor and primitive may be the life of a Bedouin
302 woman, she will go to great pains to make herself beautiful. She learns when quite young that she who wishes to be beautiful must suffer. At an early age, 8 to 10 fine round holes are pierced all the way round the rims of the ears and through these, later on, silver rings of the average size of a crown piece or small silver chains will be hung and the poor little ears dragged downwards. Then the nails of both hands and feet are coloured brown with *ḥinnā'* [1], the tips of the fingers and toes are blackened, and the inside of the hand made brown. The face, the hands and forearms, and the legs and feet are coloured yellow with curry. The rims of the eyelids are smeared with *kuḥl* [2]; even the men do this, as it is said to make the eyes strong.

The women and girls paint their faces with all sorts of figures, and their necks, breasts and shoulders and the upper surface of the hands and feet with a network of lines, mostly with some blue or black dye, but also sometimes with red or

137 [1] *Ḥinnā'* (حنّاء), *lawsonia inermis*, is a plant used for dyeing brown hands and feet. Cf. G. Schweinfurth, *op cit.*, p. 167, 181; E. W. Lane, *Arabic-English Lexicon*, London, 1865.

[2] *Kuḥl* (كحل), antimony powder, which usually mixed with grease makes a cosmetic for the rims of the eyelids.

• 137

Incense bushes on the same coastal terrace.

[facing p. 25]

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

green. The eyebrows are shaven off and a finer line is painted in. The hair is shaven off all round the edge and greased stiff and pasted against the skull. All sorts of variations in the use of the above-mentioned aids to beauty are possible. To our taste the result is often more than ugly, not to say terrifying.

Never again were we received with so much friendliness and with so little prejudice by Bedouin women. On later occasions they generally ran away screaming at our approach or hurled furious invectives at us. The people of this Ḥaiqī tribe seemed to know so little about their own religion that they were not yet infected with prejudice against *Naṣrānīs*.

Close to this camp the R.A.F. from Aden have made a landing ground for forced landings. The corners and the centre are marked out by broad lines of chalk. The big aerodrome is on the coast near Fūwa, about three hours South-west of Makalla, and somewhere in the neighbourhood there is said to be a third one.

On the coral terraces grow jathropha and in the depressions aerva, a little bohar, and also incense bushes. There were swarms of young yellow grasshoppers all over the bare rocky ground. The path runs downwards towards a wādī, where fresh water from the Ghēl Bā Wazīr and salt water from the sea meet and mingle.

The village of Sheḥēr lies on the further shore and is said to have 1500 inhabitants, who live in mud huts. In a prominent position above it stands the chieftain's house, which is, at the same time, the villagers' fortress for defence against attack. A couple of rusted cannon lie on the terrace in front of the house. There are loop-holes on every floor in the thick mud walls and the window openings are small. Shēkh Elmās is to be our host: he receives us in a friendly way in his *madjlis*[1], and, at our request, is at once ready to have quarters prepared for us on the roof, but we have to wait till the women

[1] *Madjlis* (مجلس), lit.: "the place where one sits", and has come to mean: the reception-room, meeting, or company.

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

was deeply disappointed. In this land the hurry of Europeans is neither understood nor valued. One has plenty of time oneself, and the Arabian proverb: "Patience and waiting are of the All Merciful, but haste is of Satan", is carried into practice. When Shēkh Elmās poured coals of fire on our heads by insisting that we should take his coat in place of one of our own, which had been torn in pushing the car, we departed with fresh wonder at Arabian hospitality.

It was already dark when we arrived at the frontier of the Makalla territory. The Bedouins were still lying in ambush, waiting for the foe, small fires were burning in their camp among the rocks, and the look-outs were posted close beside the road. We were under the protection of the *Dōla*, and the latter had only to fear attack from the Ḥumūmī.

7. THE LAST DAYS OF WAITING IN MAKALLA.

In Makalla it appeared that preparations for our departure were really advancing. Nevertheless we had to have patience for yet another day, as everything must be in good order. The Vizier told us that we should only be able to travel by day, as the ground was too difficult for night-journeys. "He who has not yet seen the mountains of Ḥaḍramaut has not yet learned what *real mountains* are."

So we had one day more in which to enlarge our acquaintance with the town, visit divers officials and, after that, climb the rocks behind the town, to collect plants and insects and to lay the foundation for the map of our itinerary.

The Vizier, Sayyid Abū Bakr, lives in the centre of the town, at the base of the tongue of land where, formerly, the Sultan also lived. The promontory turns out to be occupied, for the greater part, by the cemetery, in the centre of which is a fine *qubba* dedicated to Shēkh Yaᶜqūb, the patron saint of Makalla. The *ithl*[1] trees spoken of by earlier travellers no longer exist, and the cemetery has now no green whatsoever.

[1] *Ithl* or *athl* (أثل), *tamarix nilotica* Ehrenb., cf. L. Hirsch, *op. cit.*, p. 90, 306; G. Schweinfurth, *op. cit.*, p. 172, 174.

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Ḥarshīyāt we are put down by the road-side and, lying down beside our baggage, wait there for some hours till the donkeys come. Then, in pitch darkness, we go forward at a steady pace, preceded by a Bedouin carrying a lantern. By the village of Tilā^{c} es-Suflā we are to camp for the night in the dry *sēl* [1]-bed of the wādī. Luckily it is not long before the camels arrive. We set up our camp-beds amongst the boulders; under the mosquito-nets we are safe from the gnats that swarm here near the irrigated groves of date-palms and *dhura* fields. It is warm and very damp. Men and beasts lie close together. We are not yet accustomed to the sounds and odours of such a bivouac and get but little sleep.

2. ON TREK TO WĀDĪ HIMEM.

An hour before sunrise everything is again in motion, but we cannot leave until the measurements are finished. The sun rises shortly after our departure. We are all thankful to say good-bye to this damp, hot mosquito camp, but fortunately each day brings us nearer to the dryness and coolness of the Ḥaḍramaut mountain-plateau. The terraces at Tilā^{c} consist chiefly of conglomerations of round stones, and the vegetation is scanty but varied. Many acacias grow in the wādīs, here called *smur* (*acacia etbaïca*) [2], also aerva. Wādī el-Laṣb, through which we march, becomes broad and sandy, and the atmosphere becomes very warm.

A great disappointment, indeed annoyance, is to find that our advance party has already encamped at eight o'clock by a well at the edge of the wādī, where the burning heat of the sun is only tempered by some acacia trees. The baggage has been unloaded, and the Bedouins will not move for either love or money; they will first eat and then rest from the fatigues of the departure. It is so appallingly hot that we are in fear

[1] *Sēl* (سيل) is a torrent flowing after the rare rain- and thunder-storms and which usually remains only a short time.

[2] Cf. L. Hirsch, *op. cit.*, p. 300; Landberg, *Etudes sur les dialectes de l'Arabie Méridionale*, I., Leide, 1901, p. 349.

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●137

Where Wādī el-Lasb narrows there is a small brook and some vegetation.

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[facing p. 41]

Wādī Ḥimem.

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with difficulty, his popularity with our Sēbāni people was established for good. From thenceforth he was named *Ḥarmal*, a name of good companionship, which stuck to him as long as he was in Ḥaḍramaut. Ḥarmal is a corruption of Hermann; it is at the same time the name of one of the most common plants in Ḥaḍramaut, a plant inedible for cattle and, consequently, worthless.

My name they could not keep in their memories, so from this time on I was called Konsul. Bedouins are a very democratic folk: whenever they had anything to ask or to say they did not lie in wait for a favourable opportunity, but would shout out from the rear of the caravan: "Yā Ḥarmal!" or "Yā Konsul!" I would then immediately reply in an equally loud "Yā ḥādjdj!" or "Yā Sēbānī!" Then came the question, to which, whenever possible, I gave a jocular reply. They enjoyed laughing, and if one could manage to maintain one's hold on them by keeping them in good humour, it was possible to crack many a hard nut. It seemed to me very necessary to be good friends with one's Bedouins, but at the same time to keep them at a distance and to make one's authority felt.

Up above on the edge of the plateau[1] Von Wissmann had a fine, distant view. To the south were esh-Shiḥr and the sea, to the north the highest mountain of Ḥaḍramaut, Kōr Sēbān, a great massif of eocene limestone. On the east and west were the endless plain and, still visible close by, the deep-cut wādīs, and higher up the long horizontal line of the table-mountains. Several kinds of acanthus were growing close to the rock-wall and crossander, with blue-green leaves. *Cadia varia* appeared here for the first time, but later on was often to be seen in the wādīs.

When the sun began to penetrate into our rocky cleft and the temperature rose to 33° C., we were forced to break camp, although our Bedouins were not yet inclined to do so. It took a great effort to wake them up, and, while they were trying to find their camels, which had wandered off in search of food, we sauntered on ahead. At first the way wound along

[1] [See preceding page -- Analyst]

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Acacia trees, further inland in Wādī Ḥimem.

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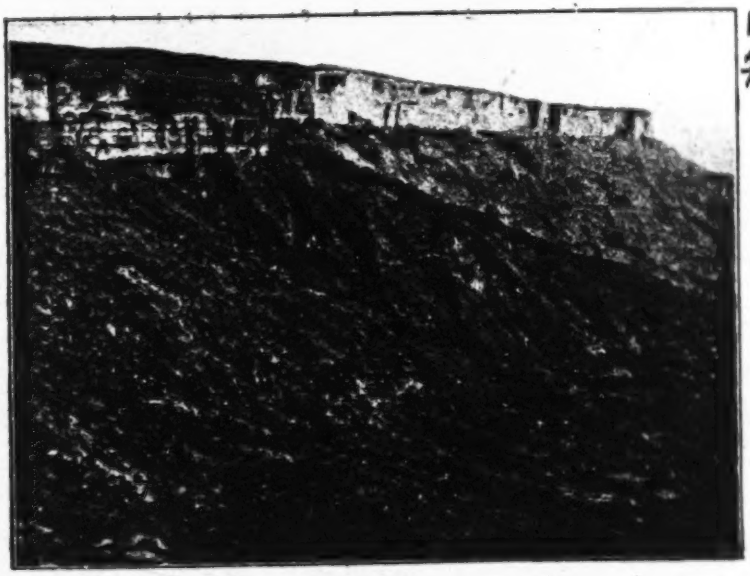

The slope of the Kōr Sēbān.

1 See pages 46 and 47 and pages 50-51 --Analyst

p.48(A)

See pages 48 and 51

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Bēn el-Djibāl. Our party resting at the first *murabba'a* alongside the first *neqāba*.

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On the top of the Kōr Sēbān .... a solitary dragon's blood tree.

p.48 (B)

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The border of the *djðl*, with some vegetation (euphorbias and acacias).

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A view over the *djðl*.

p.48 (C)

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explanation of the facts. More rainfall on this bare table-land, where all water immediately streams away, must have caused mighty floods streaming with elementary force through the wādīs to the sea. In this way wide, deep ravines in the plateau can have come into existence. The monotonous likeness in their outlines is to be ascribed to the fact that the ground, in which the erosion takes place, always shows the same composition and that the climatic conditions of the interior are invariable. A horizontal stratum of limestone, 50—100 yards thick, lies on a similar horizontal sandstone stratum. The limestone layer has, at the edge of the wādī, an almost perpendicular incline as has the sandstone layer also at first, but it then merges into the slopes of rock débris, which reach quite high up the walls of the wādī. The little towns and villages lie, in the narrow wādīs, on these slopes of débris, while in the broad wādīs, as also in Ḥaḍramaut Proper, the towns and villages are built in front of the débris.

Kōr Sēbān is the highest mountain of Ḥaḍramaut though its altitude is not more than 7088 feet. The summit is a gradual elevation, rising out of the high-lying plateau surrounding it. The eocene limestone strata are 1200 feet higher than the plateau, yet fairly horizontal, as is the case with Djebel Ghurēba, visible in the distance. Violent tectonic disturbances must have taken place here. A camel path leads upwards to the flat top of Kōr Sēbān, from where one has a fine view over the Wādī Ḥuwēre, which makes a deep cutting on the further side of Kōr Sēbān and lies quite 3000 feet lower than Wādī Ḥimem. Djebel Ghurēba, which is certainly not much lower than Kōr Sēbān, also appears to be separated from the latter range by a deep valley on its southern side. Djebel Baraka, two days' march distant, must be about the same height.

On one of the highest points of Kōr Sēbān there was growing an *arab*, apparently a *dracaena*, with large clusters of reddish blossoms. The trunk had been mutilated by the removal of pieces of bark, and living boughs had also been hacked off. On the summit plateau there was seen for the first time a semi-

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

●137 globular shrub, an *euphorbia* which is *not* succulent, but has a green bark. Although this plant had flowers and fruit, it had, at the moment, no leaves. It occurs frequently.

312 104 From the top of Kōr Sēbān there stretches westwards a slightly-furrowed plateau, intersected by good camel paths, and where cisterns for catching rain-water, called *neqābas*, have been made. The *neqābas* are cellars cut out of the limestone rock, with a narrow, round opening, three feet in diameter, and a shaft which soon broadens out to an underground cavity nine to ten feet deep and fifteen to eighteen feet in diameter. The rain-water is led there by means of low dykes. The narrow opening prevents much evaporation, and the water in the cellar remains cool. In suitable places, where there is much traffic, one finds as many as six to ten *neqābas* close together. The water in them can remain there for quite three years, but the disadvantage is that it generally has a brackish taste. There are also often simple, small, square buildings close to the *neqābas*, with walls of natural stones, loosely put together, and with flat mud roofs. They are called *murabbaʿas* and serve as shelter for travellers and their animals against the fierce sun by day and the cold wind by night. Moreover, one often finds ramparts and fortified observation posts close to the *neqābas*, recalling the many wars taking place in this barren and unpopulated land.

The *neqābas* make it possible to travel over the dry, stony plateaus. Were they not present one would have to follow the winding bed of boulders in the wādīs or else descend into them frequently and with difficulty to fetch water. Now one journeys from *neqāba* to *neqāba*. Occasionally one is found empty owing to the long-continued drought and that causes great disappointment, but one always comes upon another before long. The Bedouins of these districts generally know quite well what the condition of the different *neqābas* is and settle their route accordingly. The *neqābas* take the place of the *siqāyas* in the wādīs and in the mountains not of table

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

formation. They belong to the plateau called *djōl* (جول), lying between the mountainous coast region and the great depressions of inner Ḥaḍramaut.

6. THE DJŌL.

Our way now led over the *djōl* as far as Wādī Dō'an. The *djōl* consists of vast table-lands of reddish-brown limestone, where flat-topped, horizontal mountains, the remains of old, still higher plateaus, stretch like long wings. The wādīs are cut deep into them. We also often descend into flat, basin-shaped, wide depressions, passing over the crumbling edges of the plateaus, and afterwards have to climb laboriously up again, towards the boulders at the edge of the opposite plateau, quite half an hour away. Wherever one looks one sees the same long, horizontal lines of the table-mountains, with everywhere the forked, precipitous incisions made by the wādīs. The plain is strewn with sharp fragments of limestone, dark-brown and black in colour, which ring like metal whenever the passer-by kicks pieces of them together with his foot. Vegetation is almost absent. Towards the edges of the plateaus, against which clouds sometimes seem to break, there are a few shrubs of small, crooked, gnarled acacias. One finds no trace of animal life except a few lizards and sometimes a solitary bird. It is very warm on the *djōl* during the day, the sun scorches, and the wind is hot and dry. During the night this same wind is cold and penetrating, so that one wakes up and remains awake longing for the warmth of the sun hours before it rises; then an hour later it is torment again from the heat.

The endless monotony is the great enemy of the traveller over the *djōl*. The light is fierce and is reflected a thousand times in the metallic shining stones. The narrow camel path winds like a smooth and shining ribbon through the unruffled and almost unchanging expanse. The stones have been pushed aside by the feet of the camels which, in the course of so many years, have passed that way. The limestone of the plateau

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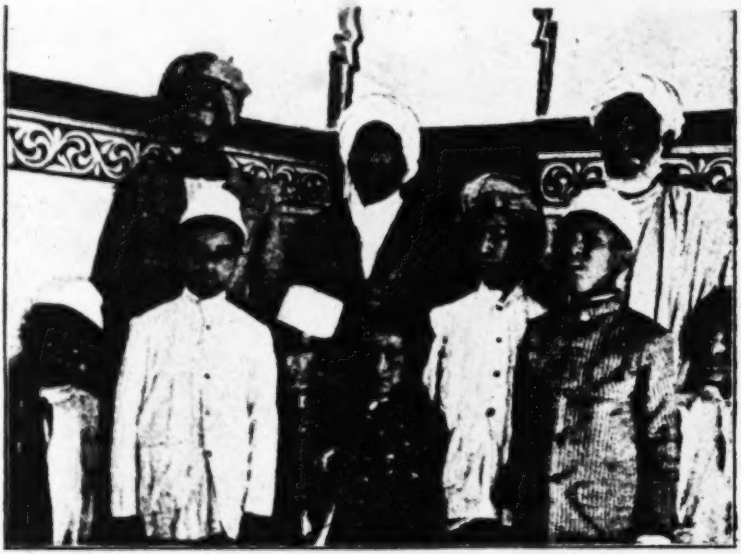

Sayyid el-Bārr with some of his children and servants.

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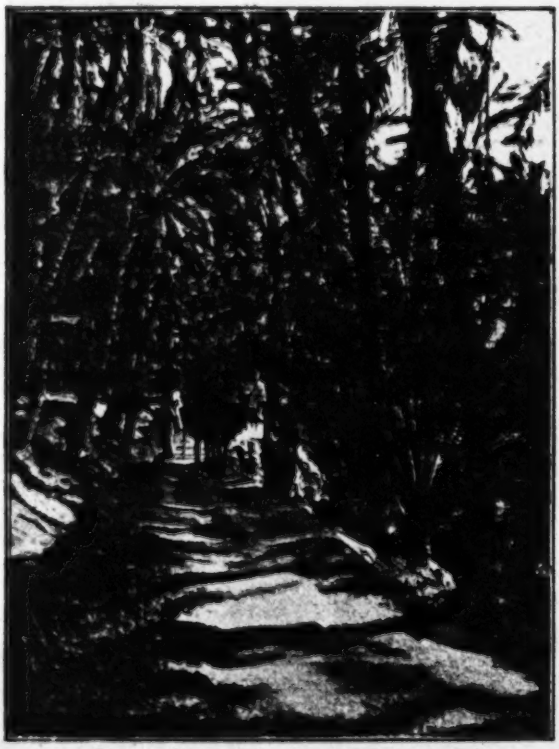

p 64 (D) Sun and shade in the palm-groves of Wādī Dō'an.

CHAPTER VIII.

ENTERING OUR "LAND OF PROMISE".

1. EL-QAṬN AND SHIBĀM.

On May 23rd our host would not allow us to depart until we had partaken of the first of the two daily meals with him. There is no apparent objection to this, as Bin Martaᶜ will take us himself in his car to el-Qaṭn. The heat and the sand-storm are very unpleasant. It is now the time when the dates ripen. The heavy, bright-yellow or deep-red bunches of fruit, sometimes as many as ten on one tree, need those hot winds to bring them to ripeness. Travelling in the sandy plain is not only unpleasant at this time, but it is also difficult to keep in the right direction. It is true, Bin Martaᶜ will look after that, but Von Wissmann has great difficulty in making a drawing of our route, surveying the mountain-wall, which is just visible from time to time, and sketching in the villages.

After Hēnin we enter a real desert of sand. The soil is loess, but a thick layer of sand has drifted over it in the lower-lying places. A few bushes of *rāk*[1] grow here and there on the loam-hills. The wādī is seven miles wide here, the villages on the other side of it disappear in the sand-storm. We shape our direction towards the S. W. wall of the wādī, to the spot where Wādī Menwab debouches into it. Soon after the rocks come in sight we also see the tops of the date-palms shining through the leaden-coloured curtain of dust.

Furṭ[2] el-Qaṭn, the beginning of the inhabited, cultivated

[1] Classical *arāk* (أراك), *salvadora persica* Garcin, cf. Landberg *Arabica*, N°. v. (Leiden, 1898), p. 39 *sq.*; L. Hirsch, *op. cit.*, p. 191, 211, 306.

[2] A *furṭ* (فرط) is a prominent top at the border of a mountain range.

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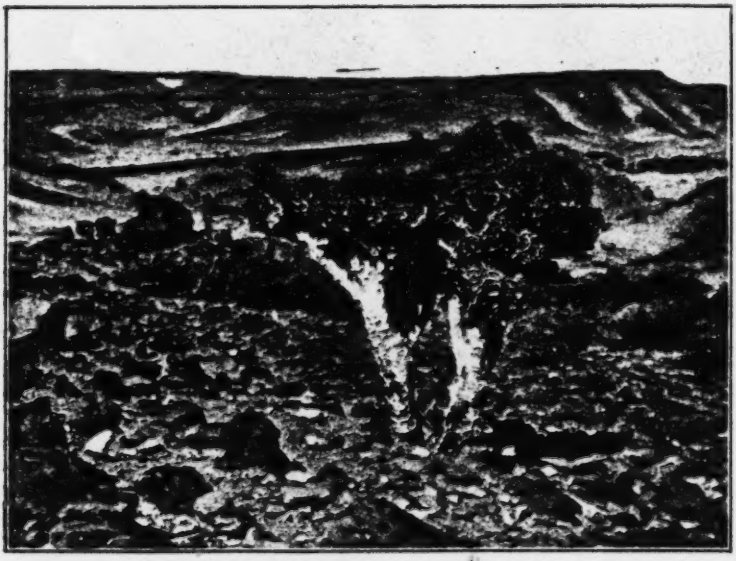

The rock-like trees near Yeb'eth.

p 216 (B)

24:Meulen and Wissmann T-3 (1931)1932 MM2 Hadhramaut MM2

with us ᶜAlī, an old and rather sour man, who was proud of being able to read and who faithfully spelt out the names of the places that we passed. When we had gone a little way he asked if we would buy a pair of spectacles for him at the *sūq*, the bazaar, of the Bandar (the seaport town, *i. e.* Makalla) so that he could better read the Koran. Our third man, ᶜAbdallāh, is a very ordinary sort of Bedouin; he speaks little, but startles us time and again on the march by his monotonously ugly and melancholy Bedouin singsong: *"Yā dānā . . . ā . . . ā . . . āl"* etc. Finally there is little Muḥammad, an indefatigable boy of twelve, who is now having his first experience of a journey of this kind and who has never yet seen either the sea or a town. Besides these, a weaver from Makalla has joined our caravan with a baggage camel and two boys. We ourselves have an enormous camel that we call the *fīl* or elephant, a female camel for the milk supply, and a young and slender animal making its first trip.

The caravan leaders here wear a strange kind of sandals. Broad strips of leather cover not only the whole upper part of the foot but extend out beyond the sole, which makes a rustling noise in walking. It is meant to keep off snakes and scorpions, especially on night journeys. Because of the richer vegetation and greater moisture, these creatures seem to be more prevalent here than in the arid interior where sandals are chiefly worn in the afternoon to protect the feet from the heat of the ground.

Nearly all the men of the village accompany us through the palm-gardens to the river; we wade through the warm water and then come to more date-groves. After that there are *dhura* fields, which finally give place to shrubs, grasses and acacia trees. We make a short cut where the river bends; the fringe of palms continues uninterruptedly beside the water.

Dhēb declares himself ready for *takalluf*, *i. e.* for doing his utmost, so it is perhaps possible that we shall reach Makalla in six days. As soon as we enter the region mapped out by Little, Von Wissmann is able to give up his detailed survey

7: Gt. Brit., Colonial Office G-3 (1949-50) 1951 MM1 Aden
Hadhramaut mm2

Plant Introductions

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242 Sann hemp and Dolichus beans were introduced from the Sudan. Tepary beans, bunch-type groundnuts, and velvet beans were introduced from Uganda. These new introductions were planted in observation plots in the Abyan district.

The introduction of deciduous fruits and of citrus for planting in the Audhali Sultanate continued.

Development Schemes

654 *The Avyan Board.* During 1949 the scheme, now furnished with sufficient capital to embark on its work as a proving scheme, developed at a satisfactory rate in all fields where adequate staff, machinery, and materials could be mustered.

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332 A rebuilt D.7 Caterpillar tractor complete with bulldozer and carry-all scraper, and three D.4 Caterpillars, one with bulldozer attachment, were obtained through the Crown Agents. These rebuilt tractors were delivered without any spares and gave a certain amount of trouble, but were responsible, together with a D.6 Caterpillar already in the hands of the Board, for great progress in irrigation construction.

Important extensions were made to the Ba Tes and Na'aza systems, while two new diversion systems were opened on the Wadi Hassan.

The tractors were generally worked as a fleet, with a mass of ox power owned or hired by the Board. Often 200 yokes of oxen—each with a scraper attached and each yoke with its driver/scraper operator in attendance—worked alongside the tractors. These were used for ripping and drawing masses of earth close to the dykes, which were then finished off by the oxen.

The value of the D.7 was judged to be equal to 150 to 200 yokes of oxen in earth-moving capacity, but for finishing off work and consolidation the use of oxen has been found to pay. Earth-moving costs have been low, and on short hauls of work of moderate height costs have not exceeded 6 annas per cubic metre.

654 Survey work has accelerated and a staff of 6 surveyors was at work in the field at the end of 1949.

A great deal of the Board's effort was devoted to the construction of offices, workshops and staff houses. At the end of 1949 substantial progress had been made and building, apart from some additions to staff houses and a projected pilot ginnery, had been completed.

The Board staff was increased considerably. On irrigation matters the Board continued to receive advice from Mr. N. Simansky, Irrigation Adviser to the Government of Jordan, who visited Abyan twice during the year. In September the staff was strengthened by the addition of an Irrigation Engineer, Mr. Douglas Hall, who joined the Board as Chief Engineer. In November Mr. B. May joined the Board on secondment, as Chief Accountant, the office having remained vacant since the resignation of the first Accountant Officer at the end of March. These two appointments were long overdue, and serious arrears of work had to be faced by both officers on taking up their appointments. In the

7: Gt. Brit., Colonial Office G-3 (1949-50) 1951 MM1 Aden
Hadhramaut mm2

accounts section the position was particularly serious; but equally important was the lack of essential hydrological data on such matters as river discharges, the availability of suitable storage sites, studies on percolation and so on. Without such information progress must be delayed.

As mentioned earlier, the X1730A type of cotton planted on 82 acres in 1948, proved a great success. The crop was ginned and marketed by the Board, and arrangements with cultivators for the new season's planting resulted in an extension of the acreage to 1,097 acres. At the end of 1949 the crop showed great promise, and in many areas appeared even better than the previous year's crop.

Grain, oil-seed and fodder production was satisfactory, though grain yields were reduced in many areas through double-cropping the land with a sorghum fodder crop in the Saif season and then a grain crop in the Kharif.

A great deal of the land in Abyan which has been well irrigated for the past five years is now becoming heavily infested with weeds, mainly the weed grass *Desmostachya bipinnata*. The introduction of cotton as a cleaning crop and the "drying up" and resting with or without cultivation, of these heavily infested lands is now recognised as an urgent matter. In order to tackle the weed problem the Board increased its tractor strength by the purchase of three Fowler Diesel crawler tractors in the last quarter of 1949.

Another problem which came to notice towards the end of 1949 was the rapid rise in the height of the water table in certain areas. The area involved does not exceed 300 acres, but already in this area (where in places the water table has risen to within six feet of the surface) salts are appearing in the upper layers of the soil, and vegetation, particularly in the seedling stage, has been affected. It was noticed that cotton, once established, flourished and appeared exceedingly healthy on these salt-impregnated soils.

Anti-Famine Measures

In the first four-and-a-half months of 1949 until general rains fell over the Eastern Protectorate, famine again threatened human life in the Hadhramaut. Relief measures were introduced, as in the previous famine, but this time so promptly that practically no deaths from famine occurred. Again aircraft of the Royal Air Force came to the rescue and dropped grain supplies to the worst affected areas. Large quantities of grain were moved inland by motor transport and any camel transport that could be mustered; at the same time large numbers of the destitute, particularly women and children, were brought down or walked down to the coastal towns, where they were accommodated in refugee camps and fed. To employ labour on relief works an extensive programme of road construction, and irrigation repair works and new construction was undertaken.

When rain fell, it was again found necessary to issue loans to

8:Gt. Brit., Colonial Office G-3 (1951-52)1954 MM1 Aden
Hadhramaut MM2

ANIMAL HUSBANDRY

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Estimate of Livestock in 1952

	Western Protectorate	*Eastern Protectorate*
Camels	35,000	45,000
Cattle	60,000	8,000
Goats	500,000	355,000
Sheep	150,000	50,000
Donkeys	3,500	3,500

Most of the animals are kept by peasant farmers who depend on animal products for an important part of their diet. Away from the less settled areas pastoral, nomadic and semi-nomadic tribes own large numbers of livestock and depend on stock products for food and for sale and barter to obtain other requirements.

Towards the end of 1952 drought conditions affected the production and general condition of livestock. No serious animal disease was recorded during the year.

There is no separate Veterinary Department in the Protectorate but the Director of Agriculture undertakes preventive measures to control important diseases such as rinderpest and horse-sickness.

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A herd of Ongole (Nellore) cattle is maintained by the Abyan Board. It is proposed to test the productivity of this breed and the suitability of animals raised locally from the breed for draught purposes in Abyan.

FORESTRY

No true forest exists in the Protectorate. Trees and shrubs common to arid regions in this latitude are found, while a dense growth of Tamarisk and Salvadora is found as "corridor forest" on the sides of the larger flood courses. Acacia is the most important species at all altitudes ; a semi-cultivated species of great value for timber and for honey-gathering bees is the Elb (*Ziziphus spina christi*).

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A general dearth of forest products for timber, building materials and for browse for livestock is apparent. In many parts of the Protectorate, and particularly in areas close to Aden, the coastal towns of the Eastern Protectorate, and the Hadhramaut towns, destruction of vegetation for charcoal production and for fuel has devastated large areas. So far no satisfactory measures have been taken to regenerate such areas. Large amounts of capital and firm action by local Governments are needed for this.

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CO-OPERATION

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The Beihan Farmers' Association, now in its fifth year, continued to benefit the Beihan district. This Association provides its members with seed stocks and grain supplies on credit. At the end of the year the assets were estimated at £14,850 and liabilities at £8,779.

The Audhali-Kaur Farmers' Association has made moderate progress since its formation in 1950. It is primarily concerned with the organisation of vegetable production, transport and marketing for its members who farm with the aid of lift irrigation in the mid-altitude area of the "Audhali-Kaur".